February 2, 1999

94-102

Thomas J. Sugrue, Chief
Wireless Telecommunications Bureau
Federal Communications Commission
2025 M Street, NW
Washington, D.C. 20554

RE: Public Notice No. DA 98-2631; Wireless E911 Phase II Requirements

Dear: Mr. Sugrue

Powertel hereby files the attached Petition for Waiver in response to the above-referenced Public Notice[1] regarding wireless E911 Phase II requirements and the development of automatic location identification ("ALI") technology under Section 20.18(e). Powertel appreciates the Commission's desire to gather information regarding the feasibility of LAI implementation in advance of the October 1 2001 deadline. In that light, Powertel sought to provide the Commission with the most recent and most accurate information available at this time. However, with such a distant implementation date, Powertel does not possess the comprehensive information necessary to fully address the waiver criteria set forth in the Public Notice.

Since the Public Notice merely recommends that carriers file a waiver by February 4, 1999, the Public Notice clearly contemplates receiving submissions after that time[2]. Accordingly, Powertel shall amend its petition for waiver from time to time as more comprehensive information comes available.

If you have any questions about the attached Petition, please contact me at 706-645-2000.

Sincerely,

James H. Benson
Director of Legal Affairs

Cc:

[1] Public Notice, Wireless Telecommunication Bureau Outlines Guidelines for wireless E911 Rule Waiver for Handset-Based Approaches to Phase II Automatic Location Identification Requirements, DA 98-2631, rel. December 24, 1998

[2] Public Notice at 5.

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C.

In the Matter of	)	
	)	
Revision of the Commission's Rules	)	CC Docket No. 94-102
To Ensure Compatibility with	)	RM-8143
Enhanced 911 Emergency	)	
Calling Systems	)	
	)	
Request for Waiver of	)	DA 98-2631
Section 20.18(e) of the	)	
Commission's Rules	)	

To: The Wireless Telecommunications Bureau

PETITION FOR A WAIVER OF 20.18(E) OF THE COMMISSION'S RULES

Pursuant to the guidelines issued by the Wireless Bureau on December 24, 1998 ("Public Notice"), Powertel, Inc., by itself and on behalf of its subsidiaries (together "Powertel"),[1] hereby applies for a waiver of Section 20.18(e) of the Commission's E911 rule in order to consider the option of a handset-based approach to Phase II Automatic Location Identification ("ALI") requirements. While Powertel has not yet determined which technology it will use to comply with the Commission's E911 location mandate, Powertel requests this waiver in order to reserve the option of a handset-based technology.

I. Introduction and Summary

The Bureau noted in the Public Notice that "application for or grant of a waiver does not

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[1] Powetel's subsidiaries include: InterCel Licenses, Inc., Powertel Atlanta Licenses, Inc., Powertel Birmingham Licenses, Inc., Powertel Jacksonville Licenses, Inc., Powertel Kentucky Licenses, Inc., Powertel Knoxville Licenses, Inc., Powertel Memphis Licenses, Inc., Powertel Nashville Licenses, Inc., Powertel/Atlanta, Inc., Powertel/Birmingham, Inc., Powertel/Jacksonville, Inc., Powertel/Kentucky, Inc. and Powertel/Memphis, Inc.

obligate the carrier to use the waiver; if a carrier wishes, it may decide to comply with the rules in effect rather than employ a granted waiver." Public Notice at 5. However, if the Bureau does grant and Powertel does choose to employ the requested waiver, Powertel commits to meet or exceed the criteria set forth in this application.

In short, Powertel requests a waiver under which Powertel would provide more accurate location information and begin providing such information sooner than required by Section 20.18(e) in order to avail itself of a phased-in implementation schedule rather than the flash-cut schedule contemplated by Section 20.18(e). Specifically, Powertel requests that the Bureau consider Powertel to be in compliance with Section 20.18(e) if it:

1) begins to deploy location-enabled handsets no later than January 1, 2001;

2) deploys only location-enabled handsets beginning on January 1, 2002, provided that all conditions for Phase II requirements have been met;
3) meets a two-dimensional location accuracy standard of 90 meters with 67 percent confidence; and
4) undertakes an active program to promote awareness of the availability and public safety benefits of location-enabled handsets.

This request is consistent with the Commission's goals in this E911 proceeding and is in the public interest. By meeting this four-part standard, Powertel will provide ALI to public safety answering points ("PSAPs") nine months earlier than is otherwise required by Section 20.18(e). In addition, Powertel will provide location information with significantly greater accuracy than currently required by the Commission's rule. By granting this waiver request, the Bureau will enable Powertel to weigh the benefits of location technologies for both Powertel and public safety and choose among those technologies.

II. The Requested Waiver Is in the Public Interest

While Powertel has yet to determine which technology it will use to meet the Commission's E911 Phase II requirements, without the requested waiver Powertel will have no choice. As the Bureau notes in its Public Notice, the Commission has recognized "concerns that the effect of Section 20.18(e) might not be technologically and competitively neutral for some technologies that might be used to provide ALI, in particular handset-based technologies such as those using the GPS satellite system." Public Notice at 1. Because of the flash-cut nature of the Phase II implementation contemplated by Section 20.18(e), Powertel shares those concerns.

Granting this waiver request and adopting a technologically neutral framework for Phase II compliance is in the public interest. Powertel will be able to make its Phase II technology decision based on the benefits to public safety, the performance of the technology, and economic factors, rather than on the artificially limited technological options permitted by the current regulatory scheme. Powertel will select the technology that it believes will provide the best service for people who call 911, which is the core purpose of the Commission's E911 requirements.

Powertel is committed to achieving the goals of Section 20.18 and plans to make its decision on how to do so in the near future. Powertel will either meet the specific requirements of the rule or will meet the standards set forth in this waiver request. Either way, Powertel will set in place a program to provide PSAPs with timely, accurate information on the location of emergency callers. If factors outside of Powertel's control (such as the actual performance of the chosen technology or manufacturers' production times) appear likely to prevent Powertel from meeting either the standard in the requested waiver or the standard in the current rule, Powertel will notify the Bureau as soon as possible in order to address any such problems.

III. Powertel's Requested Waiver Standards

In essence, Powertel requests that it be considered in compliance with the E911 rule if it selects a handset-based approach. Under this waiver, Powertel would provide equal or greater location accuracy and begin deployment earlier than required by Section 20.18(e), and Powertel would phase-in full deployment of ALI capability at a rate determined by the turnover of handsets in the marketplace.

A. Improved Accuracy

As the Bureau notes in its Public Notice, "One of the most critical factors in providing help to 911 callers in emergency situations is the accuracy of the location information." Public Notice at 3. Under this waiver, Powertel would provide PSAPs with ALI that is significantly more accurate than that required by the Commission's rule.

If Powertel employed the requested waiver, Powertel would meet a two-dimensional location accuracy standard of 90 meters with 67 percent confidence. The Commission's rule requires carriers to meet a standard of 90 meters RMS. Especially in an urban environment, that increase in accuracy of 35 meters could make the difference in saving a life.

In response to the Bureau's request, Exhibit A to this application provides field test data showing that at least one technology has exceeded this level of accuracy. The data includes results in various geographical environments, including urban canyons, suburban and rural locations, mountainous and other similar terrain, and inside buildings, as requested. Public Notice at 4.

B. Minimizing Roamer Problems

"Roamer" problems will exist only in limited circumstances. There will be no roamer difficulties where the user roams to the service area of a carrier with a network solution,

regardless of whether the user's phone is location-enabled or not. Thus there are no roamer problems for a user who has a location-enabled phone and roams to the service area of a carrier that has adopted a handset-based solution. Roaming problems exist *only* when a user with a non-location-enabled handset roams to the service area of a carrier that employs a handset-based location solution. Roaming within the context of the chosen method used for location determination is summarized in the following matrix. The matrix is independent of air interface, band, and frequency, and is carrier non-specific.

Handset Type	Carrier using Network-based Location Solution	Carrier using Handset-based Location Solution
Location-enabled	No roaming problem	No roaming problem
Not Location-enabled	No roaming problem	Roaming problem

To the extent that there is a roaming problem, it will become less significant over time. Powertel expects that both chip and handset manufacturers will include location technology in virtually all handsets in order to realize integration economies of scale. As a result, as handsets are replaced through operation of market forces, there will be progressively fewer handsets that are not location enabled, regardless of the ALI technology chosen by any particular carrier.

Ultimately, current and expected standards efforts will have the most impact on reducing roaming issues. For example, the North American GSM Alliance is proceeding as a group to standardize location technologies. Thus, a GSM subscriber who roams from Atlanta (Powertel) to Seattle (Western Wireless) would enjoy the same location services in both venues. The CDMA Development Group and the Universal Wireless Communications Consortium are similarly pursuing standardization of location technologies for their respective air interfaces. Interoperability *between* digital air interfaces is not required, as current technology does not

enable roaming among them.

C. The Rate of Handset Deployment

If Powertel employs the requested waiver, Powertel will begin to deploy location-enabled handsets earlier than required by Section 20.18(e). The Commission's rule does not require that any handsets be deployed prior to October 1, 2001. Under this waiver, Powertel would begin to deploy location-enabled handsets by January 1, 2001, a full nine months prior to the currently required date.

Powertel projects that if this waiver request is granted promptly, Powertel will be able to meet this commitment for initial availability of location-enabled handsets. The January 1, 2001 date allows for a reasonable period for Powertel to decide whether to use a handset solution, and if so which one, as well as manufacturers' required turnaround time between ordering and production of handsets.

Under the requested waiver, Powertel would also offer only location-enabled handsets by January 1, 2002. This date presumes that that all conditions for Phase II requirements have been met, as noted in the Bureau's description of the current Phase II requirement. Public Notice at 3. At this point, Powertel would have met its deployment requirements under the requested waiver.

Powertel believes with technological advances, handset turnover rate in the marketplace will be high over the next few years. As a result, if Powertel offered only location-enabled handsets beginning on January 1, 2002, full deployment of location-enabled handsets could be achieved in the next few years. However, for consumers who retain their handset, vendors may develop a retrofit kit that would make older handsets location enabled. With both these solutions in place, virtually every 911 caller who subscribes to Powertel's service will be located within the improved accuracy standard of this requested waiver.

The Bureau specifically requested comment on the "[s]teps the carrier will take with respect to minimizing problems associated with non-ALI capable handsets." Public Notice at 4. As noted above, Powertel expects market forces will ensure that customers turn over their handsets rapidly and that as a result, any such problems will be short-lived. As part of the requested waiver, Powertel would aid the market by actively educating the public and promoting the safety benefits of location-enabled handsets.

Powertel strongly urges the Bureau to rely upon market forces and carrier promotional efforts to deploy location-enabled handsets, rather than requiring carriers to affirmatively replace or upgrade non-enabled handsets. If the Bureau were to adopt such a non-market-based approach, the additional cost to carriers and PSAPs (to the extent that PSAPs reimburse carriers) would be so great as to eliminate any handset-based alternative. For example, Powertel estimates that providing location-enabled handsets for only 20 percent of US wireless customers would cost in excess of $3 billion, some of which may be underwritten by the public safety community itself. Elimination of the handset alternative means foregoing the improved accuracy and early deployment that this waiver request contemplates. In short, Powertel has determined that the financial and public safety costs of overriding market forces to address any "problems associated with non-ALI capable handsets" are simply not worth the marginal gain that would result from such a requirement in the short term.

IV. CONCLUSION

Powertel strongly endorses the public safety goals of the Commission's Phase II requirements and will work to ensure that they are met. In order to facilitate this effort, Powertel requests that the Bureau grant this waiver request to provide Powertel with the widest range of technological options possible, including a handset-based solution. If the Bureau grants and Powertel employs this waiver, the public will benefit from improved ALI accuracy and earlier ALI deployment. For all of these reasons, Powertel urges the Bureau to grant this application.

Respectfully submitted,

Powertel, Inc.

By: JAMES H. BENSON
Director of Legal Affairs
1233 O.G. Skinner Drive
West Point, Georgia 31833-1789
(706) 645-2000

Dated: February 4, 1999

Exhibit:
A—Field Test Data

EXHIBIT A

Field Testing Overview

- Extensive testing in the SF Bay Area, Denver (audited), Tokyo (audited), Kyoto (audited)
- Full range of outdoor environments: freeway, suburban, deep urban canyon
- Broad cross-section of indoor environments: high-rise, commercial, residential, brick, glass/steel
- System tested at speed in vehicle with GPS antenna inside at passenger head height
- End-to-end E9-1-1 field trial
  - >650 test calls; 100% correctly routed (based on SnapTrack-determined location)
  - partnered with SignalSoft, SCC, U S WEST Wireless, two Denver-area PSAPs

SnapTrack

Summary Results: Denver Testing

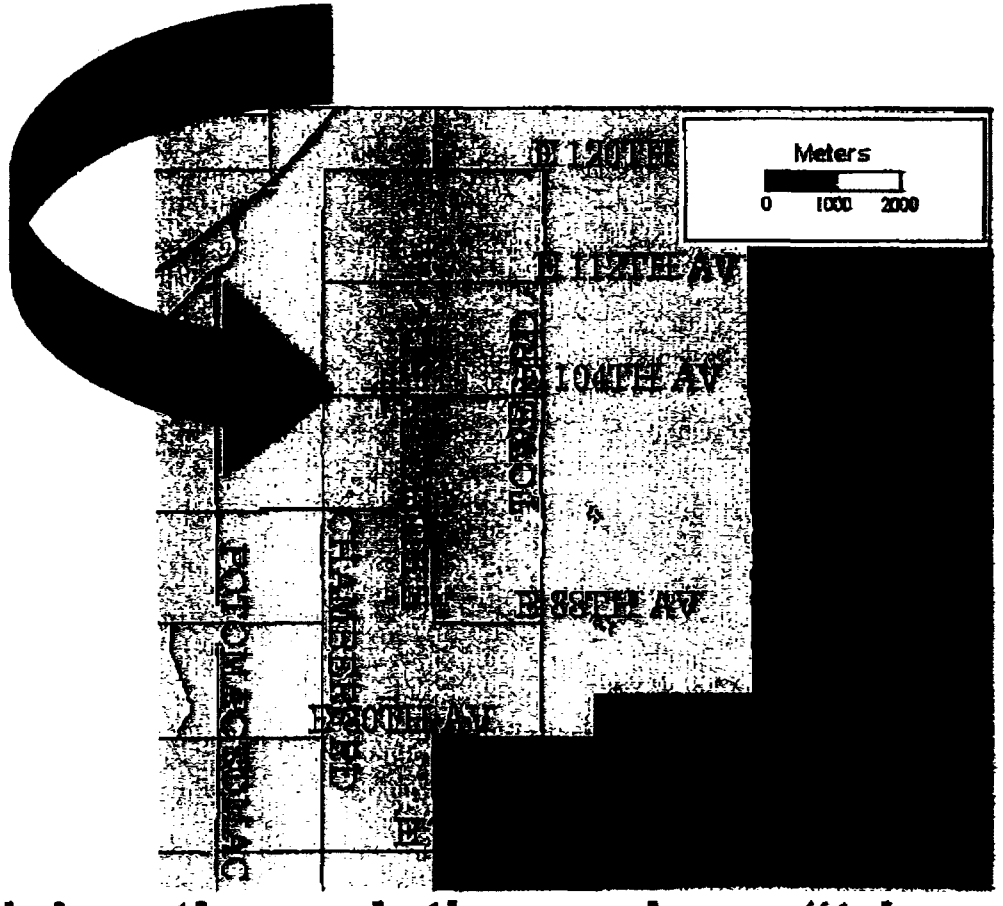
Location	Garmin Results	SnapTrack Single Sample Results					
		Fixes	Attempts	Percent Yield	1 sigma 68.3% CEP meters	2 sigma 95% CEP meters	Max Error meters
Indoor, 2 story residence (wood frame) 3707 W 98th place, 1st floor interior hall	no fix	106	106	100%	21	35	72
Indoor, 2 story residence (wood frame) 3707 W 98th place, center of basement	no fix	33	33	100%	20	*	60
Indoor, 2 story residence (wood frame) 627 Manne, center of basement	no fix	36	37	97%	16	*	50
Indoor, 2 story office building (Brick) 2045 Broadway, 2nd floor interior hallway	no fix	110	110	100%	17	36	66
Indoor, 2 story office building (Brick) 2045 Broadway, 1st floor interior room	no fix	34	36	94%	22	*	79
Indoor, Shopping Mall Westminster Mall, Denver	no fix	27	27	100%	36	*	133
Indoor, Shopping Mall Aurora Mall, Aurora (Denver)	no fix	31	39	79%	44	*	168
Indoor, 50 story office building (Glass/Steel) 1801 California, 21st Floor 4.4 m from window	no fix	32	36	89%	84	*	231
Outdoor, urban canyon street level (mid block) Curtis street between 16th and 17th, Denver		120	120	100%	45	113	247
(Supplemental reference sites)							
Outdoor, urban canyon Parking Garage Roof		57	57	100%	18	*	47
Outdoor, open site 71st and Winchester Circle		16	16	100%	4	*	5

* Insufficient data to calculate 2 sigma value
** 5 Sample average not calculated

Altitude data collected but not tabulated

SnapTrack

Single Cell Site Problem



Network location solutions rely on "triangles of towers" - cellular base stations are not deployed in triangles!

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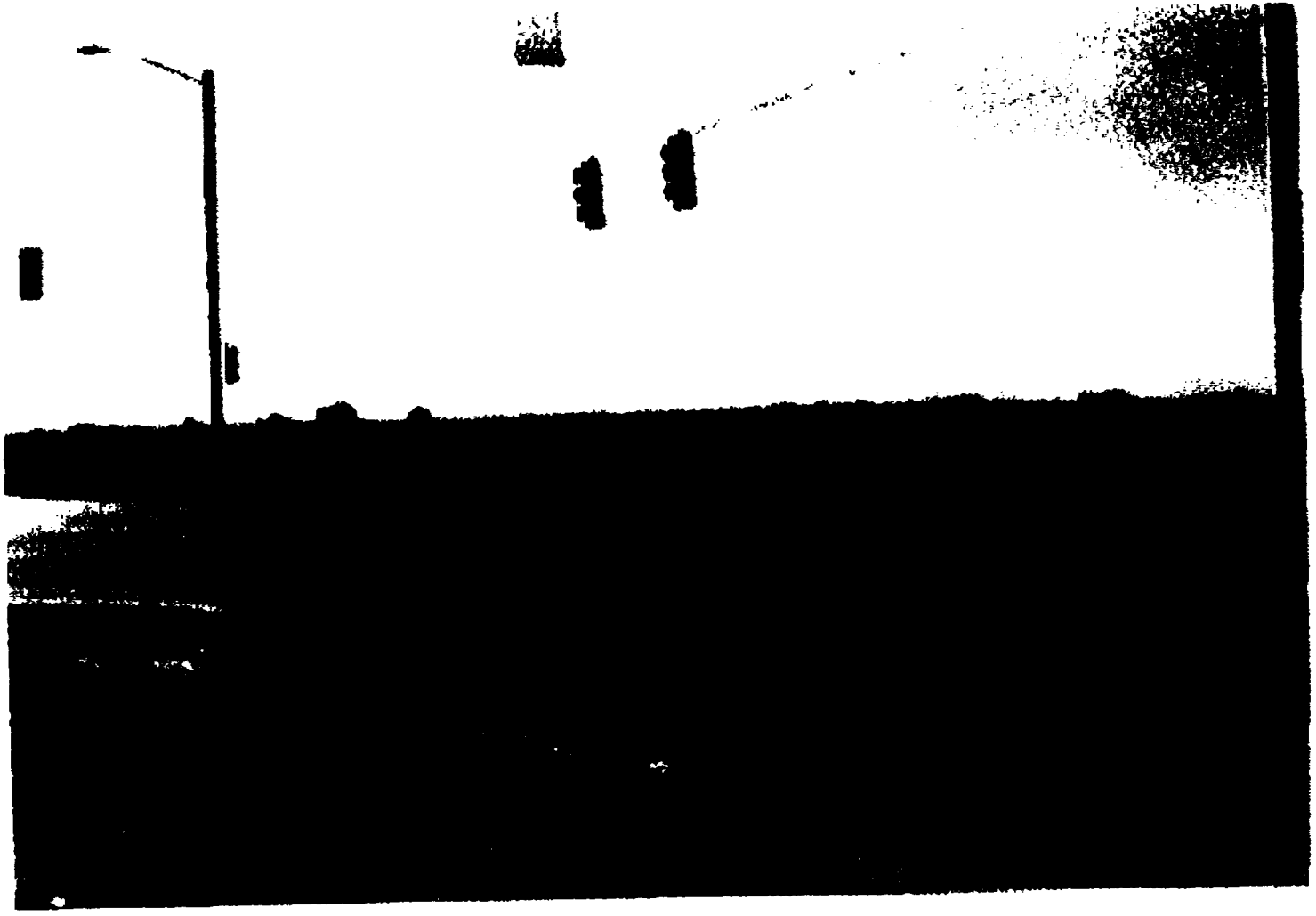
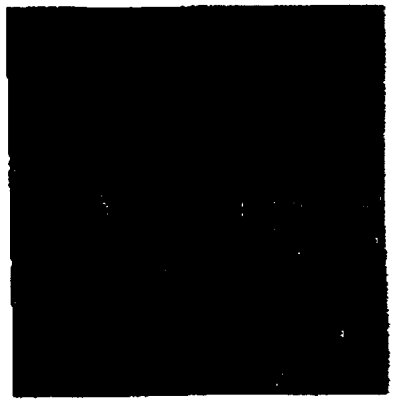
Adams County, CO (Rural)





Sensitivity & Accuracy*

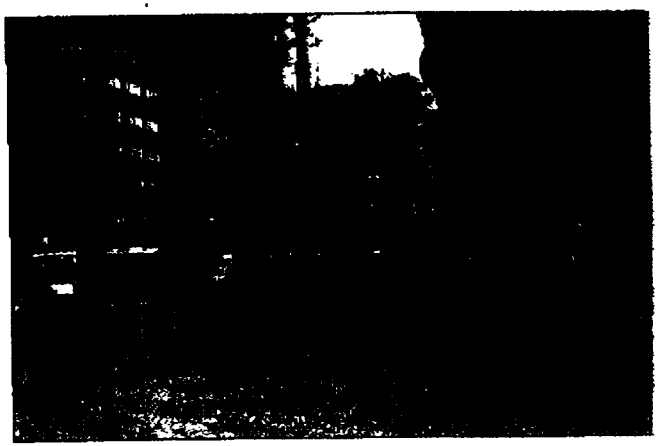
Each location is an independent fix from a cold start

Location	1-sigma (68.3%)	Yield
A. Outdoor, open site	4 meters	100%
B. Sport utility vehicle, antenna by driver's head	17 m	100%
C. 2-story residence, center of basement	20 m	100%
D. 2-story brick office bldg., 1st floor, interior room	22 m	94%
E. Urban Canyon	29 m	100%
F. 50-story glass/steel, 21st floor, 14 ft. from wall	84 m	89%

*Testing designed and audited by US WEST Wireless

SnapTrack

Japan Field Testing*



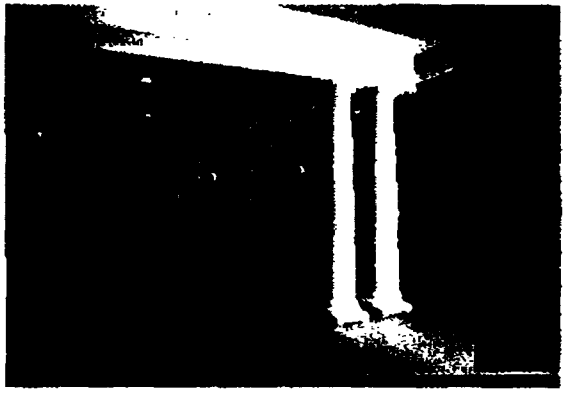
5 point averaging

Location	1-sigma (68.3%)	Yield
Outdoor, Kawasaki Dorm	4 meters	100%
Indoor, Kawasaki Dorm	12 m	100%
Shinbashi	12 m	100%
Inside Coffee Shop	20 m	100%
Ginza	18 m	100%
I-Land Street	44 m	100%

*Testing designed and audited by NTT DoCoMo

SnapTrack

Washington, D.C. Field Testing



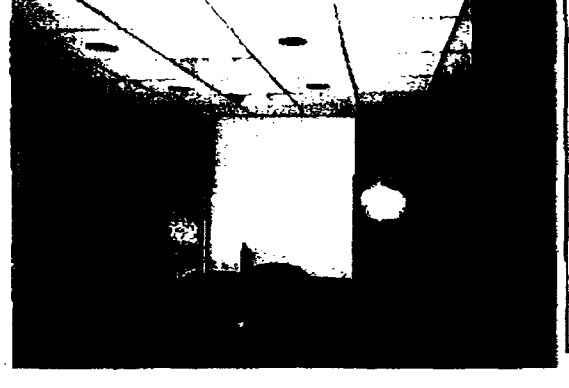
9-STORY URBAN OFFICE BUILDING

A. 8th Floor Conference Room

avg. accuracy: <25 m

B. 1st Floor Lobby

avg. accuracy: <75 m

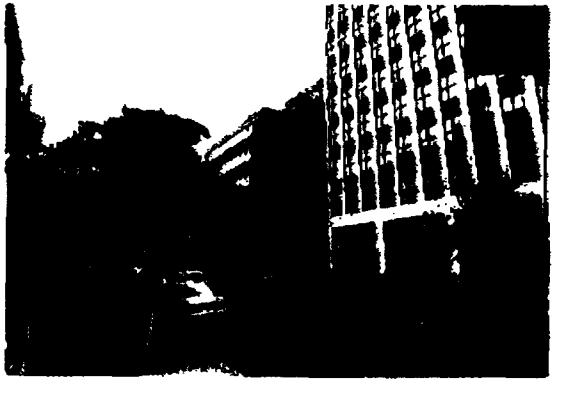


C. Urban alley

avg. accuracy: <50 m

D. Urban canyon - driving

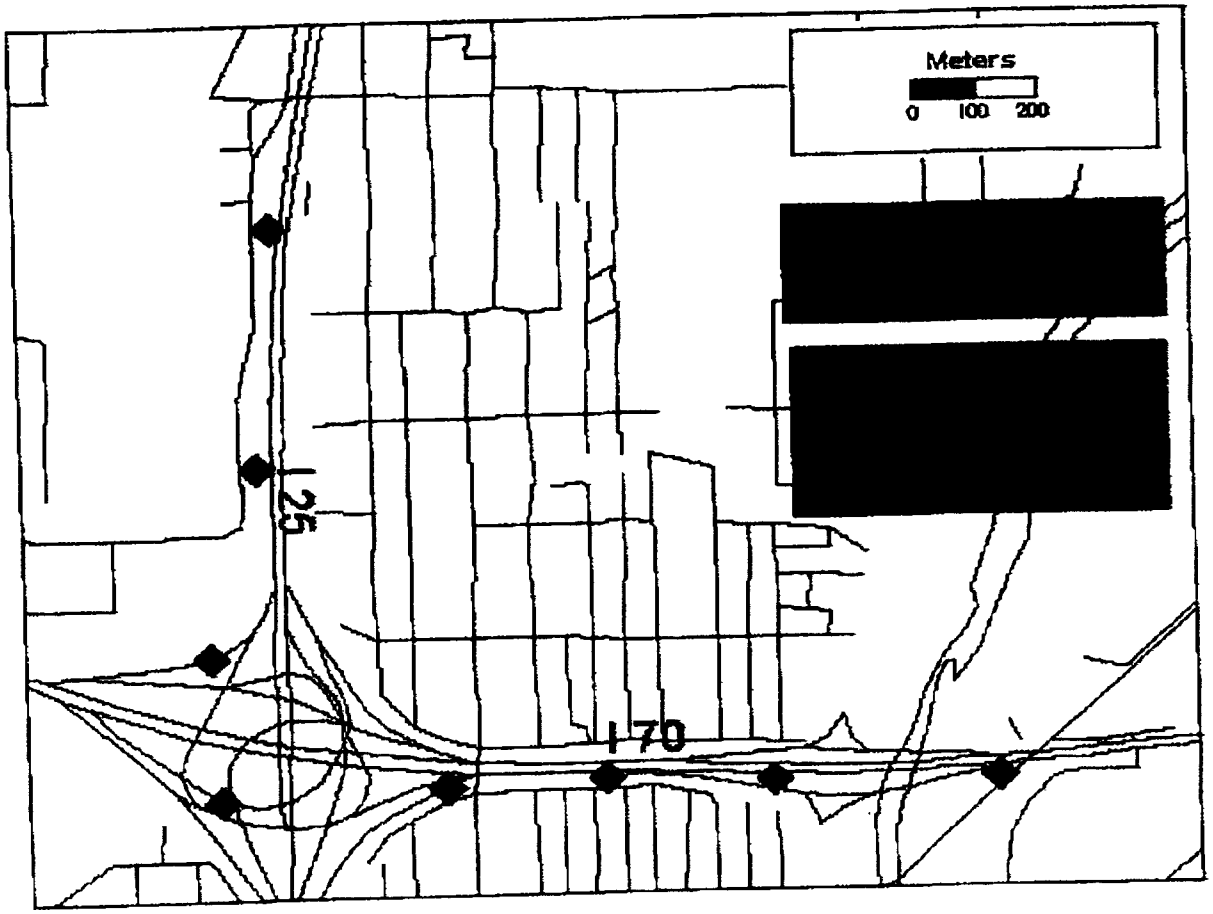
avg. accuracy: <40 m



SnapTrack

Urban Highway Drive Test*

Antenna Inside Car



*Testing designed and audited by US WEST Wireless

SnapTrack